



ENVIRONMENTAL MONITORING REPORT, MAY 2022

PARRAMATTA LIGHT RAIL INFRASTRUCTURE WORKS

3 June 2022

Parramatta
Connect

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1. Introduction

1.1. Background

Parramatta Light Rail Stage 1 ('Stage 1') will connect Westmead to Carlingford via Parramatta Central Business District (CBD) and Camellia. Stage 1 is expected to be operational in 2023.

Stage 1 will create new communities, connect great places and help both local residents and visitors move around and explore what the region has to offer. The route will link Parramatta's CBD and train station to a number of key locations, including the Westmead Precinct, the Parramatta North Growth Centre, the new Western Sydney Stadium, the Camellia Town Centre, the new Powerhouse Museum and Riverside Theatre arts and cultural precinct, the private and social housing redevelopment at Telopea, the Rosehill Gardens Racecourse and the three Western Sydney University campuses.

Key features of Stage 1 include:

- A new dual track light rail network of approximately twelve (12) kilometres in length, including approximately seven (7) kilometres within the existing road corridor and approximately five (5) kilometres within the existing Carlingford Line and Sandown Line, replacing current heavy rail services
- Sixteen (16) stops that are fully accessible and integrated into the urban environment including a terminus stop at each end of Westmead and Carlingford
- High frequency 'turn-up-and-go' services operating seven days a week from 5am to 1am. Weekday services will operate approximately every 7.5 minutes in the peak period between 7am and 7pm
- Modern and comfortable air-conditioned light rail vehicles, nominally 45 metres long and driver-operated, each carrying up to 300 passengers.
- Intermodal interchanges with existing public transport services at Westmead terminus, Parramatta CBD and the Carlingford terminus
- Creation of two light rail and pedestrian zones (no general vehicle access) within the Parramatta CBD along Church Street (generally between Market Street and Macquarie Street) and along Macquarie Street (generally between Horwood Place and Smith Street)
- A Stabling and Maintenance (SaM) Facility located in Camellia for light rail vehicles to be stabled, cleaned and maintained
- New bridge structures along the alignment including over James Ruse Drive and Clay Cliff Creek, Parramatta River (near the Cumberland Hospital), Kissing Point Road and Vineyard Creek, Rydalmere
- Alterations to the existing road network including line marking, additional traffic lanes and turning lanes, new traffic signals, and changes to traffic flows
- Relocation and protection of existing utilities
- Public domain and urban design works along the corridor and at Stop precincts
- Closure of the heavy rail line between Carlingford and Clyde
- Active transport corridors and additional urban design features along sections of the alignment and within Stop precincts
- Integration with the Opal Electronic Ticketing System (ETS)
- Real time information in light rail vehicles and at Stops via visual displays and audio.



1.1.1. Statutory Context

The Parramatta Light Rail is classified as Critical State Significant Infrastructure (CSSI) and was subject to environmental impact assessment under the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS assessed impacts for Parramatta Light Rail Stage 1 (Westmead to Carlingford) including the light rail and associated road enabling works.

Stage 1 received Infrastructure Approval from the Minister for Planning under Section 5.19 of the EP&A Act on 29 May 2018 (Critical State Significant Infrastructure Application SSI-8285), subject to the conditions provided in the Instrument of Approval, specifically Schedule B – Ministerial Conditions of Approval.

The Infrastructure Approval was subsequently modified under Section 5.25 of the EP&A Act on 21 December 2018 and 25 January 2019.

The planning approval, modifications and related environmental assessment documents are located at: http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8285.

A Construction Environmental Management Plan (CEMP) has been prepared for the Parramatta Light Rail Package 4 – Infrastructure Works (Infrastructure Works). The purpose of the CEMP and associated Sub-plans is to address the requirements of the:

- Minister’s Conditions of Approval (CoA) SSI-8285
- Revised Environmental Mitigation and Management Measures (REMMMs)
- Environmental Performance Outcomes (EPOs)
- Applicable legislation and contractual requirements, including the PLR Stage 1 Infrastructure Contract Project Deed (ISD-17-6721).

The REMMMs and EPOs are listed in Parramatta Light Rail Stage 1 Westmead to Carlingford via Parramatta CBD and Camellia Environmental Impact Statement (the EIS), as amended by the Parramatta Light Rail (Stage 1) Westmead to Carlingford via Parramatta CBD and Camellia Submissions Report (incorporating Preferred Infrastructure Report) (March 2018) (the SPIR). The CEMP and associated Sub-plans were approved the Secretary on the 21 November 2019.

1.2. Scope

The scope of this report is to present monthly results of the inspection and monitoring programs outlined in the Infrastructure Works CEMP and associated Sub-plans, including the results of the construction monitoring programs referred to in Condition C9 of the Planning Infrastructure Approval.

Environmental inspections and monitoring are undertaken to:

- Validate the predicted impacts of the Infrastructure Works
- Measure the effectiveness of environmental controls
- Track progress against targets and objectives of the CEMP.

The monitoring requirements for nominated aspects are included in the relevant Sub-plans and summarised in **Table 1-1**.

Where relevant, data will be presented on a progressive basis (i.e. monthly summary) to identify trends. The data of the monitoring programs will also be reviewed annually in the Annual Environment Report.



Table 1-1 Monthly Environmental Monitoring Reporting Requirements

CEMP or Sub-plan	Monitoring program	Distribution
Noise and Vibration Management Sub-plan	<ul style="list-style-type: none"> - Locations and descriptions of monitoring undertaken - Noise monitoring results - Summary of any exceedance of the nominated criteria - Corrective actions 	<ul style="list-style-type: none"> - City of Paramatta Council - Cumberland Council - EPA - NSW Health - TfNSW - IC - ER - AA - Made publicly available
Soil and Water Management Sub-plan	<ul style="list-style-type: none"> - Weather forecasts and observations - Water Quality (Turbidity) monitoring - Discharge and dewatering monitoring 	<ul style="list-style-type: none"> - City of Paramatta Council - Cumberland Council - EPA - DOI Water - TfNSW - IC - Made publicly available
Air Quality and Dust Management Sub-plan	<ul style="list-style-type: none"> - Weather observations - Dust deposition monitoring - Real time aerosol dust monitors - Asbestos fibre air monitoring 	<ul style="list-style-type: none"> - EPA - TfNSW - IC - Made publicly available
Grey-headed Flying-fox (GHFF) Construction Monitoring Program	<ul style="list-style-type: none"> - Weekly visual checks of GHFF camp during high risk periods (1 September to 31 January) 	<ul style="list-style-type: none"> - TfNSW



2. Site Activities

Table 2-1 provides a summary of the site activities for this reporting period (26 April 2022 to 25 May 2022).

Table 2-1 Site activities during reporting period

Precinct	Site Activities
Westmead and North Parramatta	<ul style="list-style-type: none">– Ongoing utility, street lighting and Multi-Function Pole (MFP) installation– Traffic signal works– Retaining wall and driveway works for property adjustment– Road pavement and finish works (kerb and gutter)– Urban design works (soft and hard landscaping)– Rail grinding and defect works.
Parramatta CBD	<ul style="list-style-type: none">– Utility works, including MFPs and low voltage property connections– Property adjustment works– Access works at 153/155 George Street– Track and road works– Paving (track and footpaths)– Intersection works, including Macquarie Street/Smith Street and Market Street/Church Street, Hassall Street/Harris Street and George Street/Alfred Street– Traffic signal works– Defects and rectifications– Rail grinding– Landscaping works– Demobilisation of work areas
Camellia and Carlingford line	<ul style="list-style-type: none">– James Ruse Drive Bridge track works– Traffic signal and defect works– Landscaping works– Cycle ramp works– Defect rectification works



3. Monitoring Results

Section 3 presents a summary of the environmental inspection and monitoring programs completed during the reporting period (26 April 2022 to 25 May 2022). Detailed monitoring results for each activity are presented in the appendices to this report.

3.1. Inspections

A total of five ER inspections, two AA inspections, one EPA inspection and two DPE inspections were completed during the reporting period in addition to 14 internal inspections. It is also noted that TfNSW attend all ER inspections.

Table 3-1 provides a summary of the number of actions raised and closed within the agreed timeframe.

Table 3-1 Inspections for reporting period

Date	Number of Inspections	Type	Actions	Closed in Time
27/04/22	1	Internal Inspection	3	Yes
28/04/22	1	Internal Inspection	5	Yes
28/04/22	1	ER Inspection	4	Yes
28/04/22	1	AA Inspection	1	Yes
29/04/22	1	Internal Inspection	2	Yes
03/05/22	1	Internal Inspection	3	Yes
04/05/22	1	Internal Inspection	2	Yes
04/05/22	1	ER Inspection	1	Yes
09/05/22	2	Internal Inspection	8	Yes
11/05/22	1	Internal Inspection	8	Yes
12/05/22	1	Internal Inspection	3	Yes
12/05/22	1	ER Inspection	1	Yes
13/05/22	1	AA Inspection	1	Yes
17/05/22	1	Internal Inspection	5	Yes
18/05/22	1	Internal Inspection	3	Yes
18/05/22	1	ER Inspection	1	Yes
18/05/22	1	EPA/DPE	1	Yes
19/05/22	2	Internal Inspection	11	Yes



Date	Number of Inspections	Type	Actions	Closed in Time
24/05/22	1	Internal Inspection	8	Yes
25/05/22	1	ER Inspection	3	Yes
25/05/22	1	DPE	0	N/A
Total	23	-	74	-

3.2. Weather

The total rainfall recorded during the reporting period was 99.0 mm with 13 days exceeding one millimetre of rain. No events exceeded the 80th percentile (25.8mm).

During the reporting period, there were eight days where the maximum wind gust recorded was greater than 25km/hr and no days where the maximum wind gust recorded was greater than 50km/hr. There was one day where wind speeds greater than 25km/hr were forecast. On this day, a notification was issued to the construction team to alert them of the strong winds forecast, including direction for necessary controls to be implemented.

A summary of the weather observations and weather events during the reporting period of relevance to the Soil and Water Management Sub-plan and Air Quality Management Sub-plan Trigger Action Response Plans (TARPs) are summarised in **Table 7-2**. A comparison between long term monthly means and recorded values can be found in **Figure 3-2**.

Detailed weather observation records for the reporting period are presented in **Appendix A-1**.

Table 3-2 Weather summary and trigger weather events for reporting period¹

Weather Event	Forecast	Observation
Minimum temperature	6.0°C	5.0°C
Maximum temperature	28.0°C	27.8°C
Total rainfall	143.2 mm	99.0 mm
Number of days with rain (>1mm)	16 days	13 days
>80 th percentile (25.8mm) rain events	No events	No events
>85 th percentile (33.1mm) rain events	No events	No events
Flood warning / events	None	None
>25km/hr wind ²	1 day	8 days
>50km/hr wind	No days	No days
>60km/hr wind	No days	No days

¹Weather summary based on data from the 26 April 2022 to 25 May 2022 (30 days).



²Wind data from Sydney Olympic Park AWS (Archery Centre) {station 066212}. Weather data from Parramatta North (Masons Drive) {station 066124}.

Note: Red text indicates observation greater than forecast.

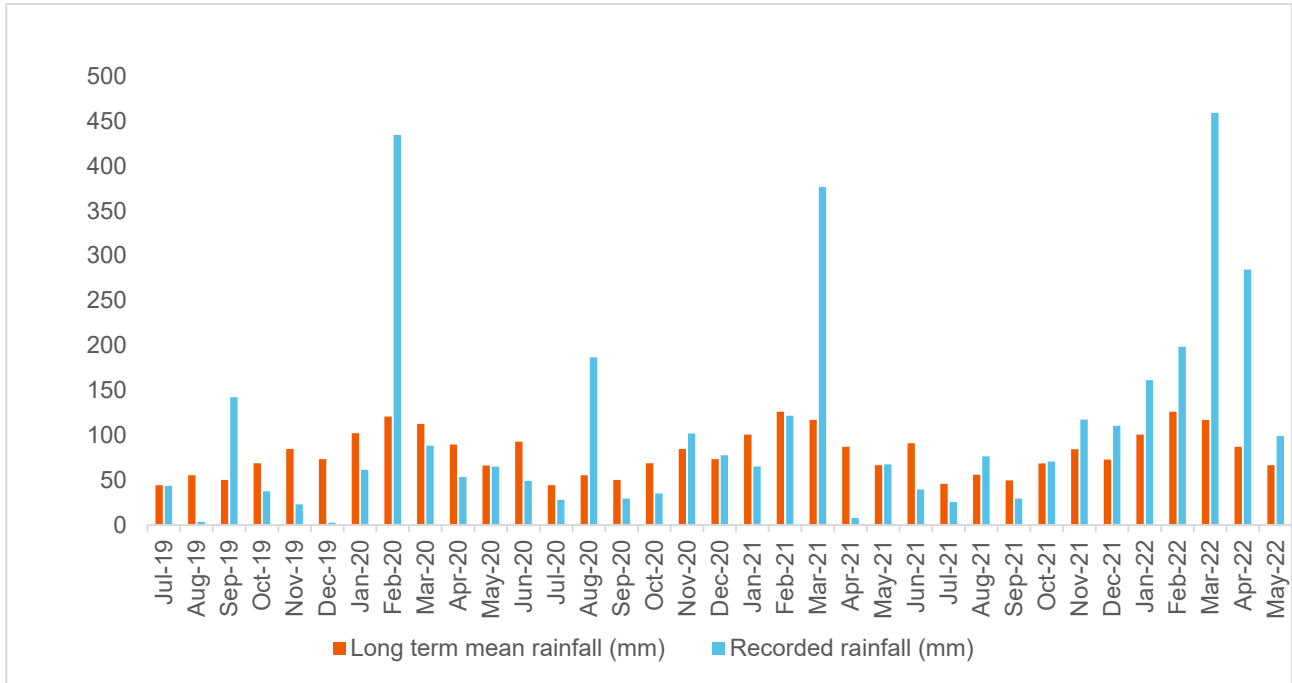


Figure 3-1 Monthly rainfall comparison

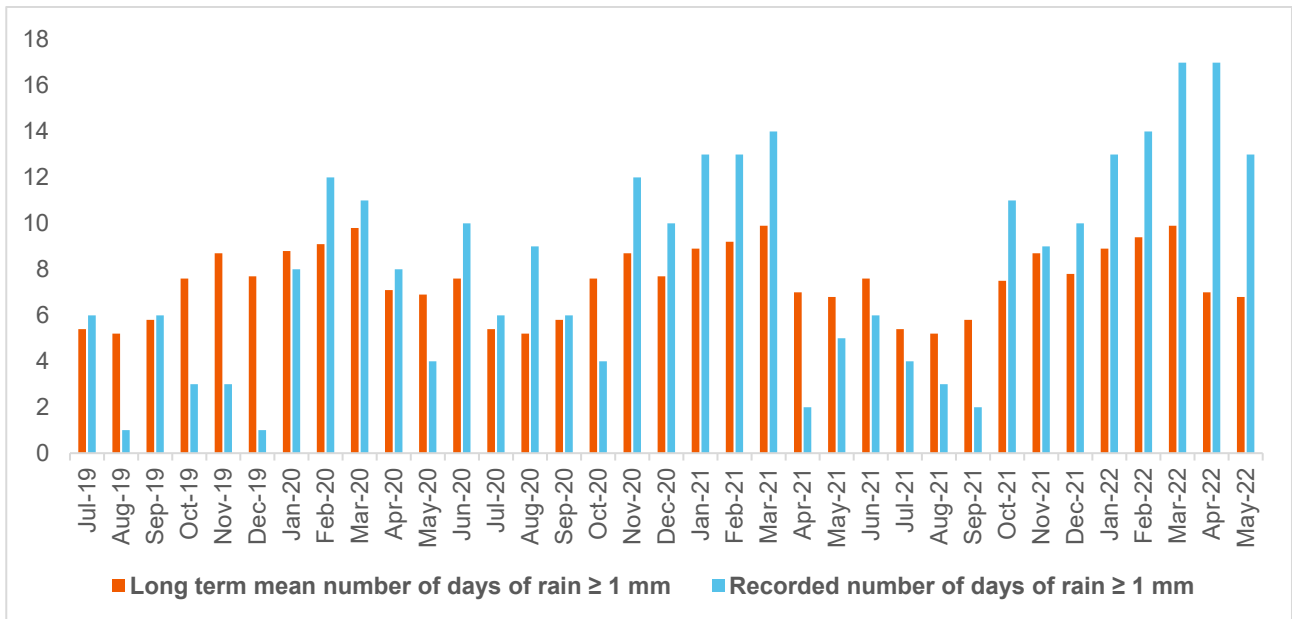


Figure 3-2 Monthly rain days comparison

3.3. Noise and Vibration

Table 3-3 provides a summary of noise monitoring events conducted during the reporting period. Detailed noise monitoring results and comments are presented in Appendix A-2. There were no exceedances of the predicted noise level ($L_{Aeq15min}$) during the reporting period.



Additional information on the hours of works, respite requirements and alternative accommodation is provided in the Noise and Vibration Management Sub-plan (Section 11.3).

Vibration monitoring events completed during the reporting period are summarised in **Table 3-4** and detailed in **Appendix A-2**. During the reporting period, no attended vibration monitoring was undertaken.

All noise and vibration monitors available during the reporting period, together with current NATA calibration data, are provided in **Table 3-5**.

Continuous noise and vibration monitoring was undertaken during the reporting period at medical facilities in Westmead that have been identified as sensitive receivers. In consultation with the Health Administration Corporation (HAC), monitoring will be ongoing for a minimum of 12 months. The locations of the noise and vibration monitors (provided in **Table 3-6**) and the trigger levels were developed by noise and vibration consultant Renzo Tonin in December 2019 (HAC Assessment System, 19 December 2019). In accordance with this report, trigger level alarms were set on each of the continuous noise and vibration monitors to mitigate the potential impact of construction works on sensitive laboratory equipment and/or medical services. The alarms are set to very stringent criteria and as such, can be triggered by both construction activities and hospital operations.

During the reporting period, all alarms were investigated by Parramatta Connect in consultation with HAC. Where the source of the alarm was determined to be construction activities, works were ceased, and additional management measures were identified and implemented prior to recommencement of works.

Table 3-3 Summary of noise monitoring for reporting period

Date	Monitoring Location	Attended/Continuous	Description
19/05/2022	157 Hawkesbury Rd, Westmead	Attended	Trackworks and concrete works
19/05/2022	199 Hawkesbury Rd, Westmead	Attended	Finishing works
19/05/2022	Cumberland Hospital East	Attended	Trackworks
19/05/2022	55 O'Connell St, North Parramatta	Attended	Concrete works
19/05/2022	St Patricks Cemetery, North Parramatta	Attended	Finishing Works
19/05/2022	20 Victoria Rd, Parramatta	Attended	Concrete works
24/05/2022	Arthur Phillip High School, Parramatta	Attended	Finishing Works
24/05/2022	9 Noller Pde, Parramatta	Attended	Concrete Works
26/06/2020 -ongoing	Westmead Institute for Medical Research (Sleep Lab)	Continuous	General construction
26/06/2020 -ongoing	Westmead Institute for Medical Research (Brain Dynamics Centre)	Continuous	General construction
26/06/2020 -ongoing	Children's Medical Research Institute (Microscopy Labs)	Continuous	General construction
26/06/2020 -ongoing	Cumberland Hospital (Clinical psychology rooms)	Continuous	General construction

Table 3-4 Summary of vibration monitoring for reporting period

Date	Monitoring Location	Attended/Continuous	Description
26/06/2020	Westmead Institute for Medical Research (HAL incubators)	Continuous	General construction



Date	Monitoring Location	Attended/Continuous	Description
26/06/2020	Westmead Institute for Medical Research (Microscopy Labs)	Continuous	General construction
26/06/2020	Children's Medical Research Institute (Microscopy Labs)	Continuous	General construction

Table 3-5 Noise and vibration monitors and NATA Calibration

Equipment	Serial Number	Calibration Date
Noise Level Meter	00973277	2/12/2022
Noise Level Meter	00661732	01/06/2022
Noise Level Meter	00973275	17/12/2022
Vibration Monitor	BE14639	10/02/2023
Vibration Monitor	BE17441	14/07/2022

Table 3-6 HAC noise and vibration monitor locations

Organisation	Monitor Type	Location
Westmead Institute for Medical Reach	Vibration Monitor	HAL incubators
		Microscopy Labs
	Noise Monitor	Sleep Lab
Children's Medical Research Institute	Vibration Monitor	Brain Dynamics Centre
	Noise Monitor	Microscopy Labs
Cumberland Hospital	Noise Monitor	Labs (Level 1)
		Clinical psychology rooms

Note: The calibration of the monitoring equipment is checked in the field before and after the noise measurement period per Standards Australia AS/IEC 60942:2004/IEC 60942:2003–Electroacoustic – Sound Calibrators.

3.4. Soil and Water

3.4.1. Water quality in receiving waters

A pre-construction investigation to establish water quality objectives for the project is included within the EIS Technical Paper 6 – Water Quality Assessment.

Water monitoring results are summarised in **Table 3-7** and detailed in **Table A-3-1**. There were no triggers for water sampling during the reporting period and as such no monitoring was undertaken.

Table 3-7 Water Quality in Receiving Waters

Date	Type	Type of Results	Wet / Dry	Locations
-	-	-	-	-



Table 3-8 Water Monitor Calibration

Equipment ¹	Serial Number	Calibration Date
Water Quality Monitor	DV7F6E7J	23/07/2022
Water Quality Monitor	TN4DYW19	03/02/2023

¹All equipment is calibrated by NATA standards.

3.4.2. Discharge and dewatering

There were no discharge events during the reporting period.

3.5. Air Quality

3.5.1. Dust Deposition Monitoring

A dust deposition gauge was installed at 13A Grand Avenue in Camellia in December 2019 in advance of works which commenced at the beginning of February 2020. Additional dust gauges were progressively installed at Rydalmere Station, Dundas Station, Carlingford and Telopea in advance of large-scale earthworks.

As of November 2021, the gauges at Carlingford, Telopea and 13A Grand Avenue were removed following conclusion of large-scale earthworks. In December 2021 and early January 2022, the gauges at Rydalmere Station and Dundas Station, respectively, were similarly removed. As such, the dust deposition monitoring program has concluded.

3.5.2. Asbestos Fibre Monitoring

Asbestos air monitoring is completed in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 3003(2005)], with NATA certification applying to all sample collection, handling and analytical procedures.

Asbestos Fibre Monitoring results are summarised in **Table A-4-1** in **Appendix A-4**. All reported results were satisfactory and conform with the minimum action level of <0.01 fibres /mL for control monitoring as outlined in Work, Health and Safety (2017) Regulation; and SafeWork NSW (2019) Code of Practice – How to Safely Remove Asbestos.

3.6. Flora and Fauna

3.6.1. Grey-Headed Flying Fox Monitoring

A Grey-Headed Flying Fox (GHFF) camp is located in Parramatta Park which lies approximately 150m from the project boundary at the nearest point.

Under Condition of Approval C9, a GHFF Construction Monitoring Program has been developed by TfNSW. The requirements of this Program have been reflected in the Flora and Fauna Management Sub-plan and include visual inspections on a weekly basis during the 'high risk' months of September to January. If distress is observed within the camp, immediate notification must be provided to TfNSW.

In addition, as required by the Environmental Work Method Statement for Bridge Road Bridge, a trained ecologist from Narla Environmental is required to undertake additional inspections of the camp during bridge



piling works (**Table 3-9**). As these works have concluded, it was determined using the GHFF Mitigation Application Procedure that weekly visual inspections were not required for the reporting period.

Table 3-9 Observations from Visual Monitoring of Grey Headed Flying Fox Camp

Date	Time	Weather Conditions	Works	Notification on Triggers ¹	Comments
-	-	-	-	-	-

¹Notification triggers include: >50% of the roost takes flight for over 20 minutes, GHFF leaving the roost in daylight hours, unusual vocalisations, located on or 2m from the ground, panting, saliva spreading, adults moving away from young, GHFF injured or killed on site (including aborted foetuses).

3.7. Issues/incidents/non-compliance

Table 3-10 provides a summary of environmental compliance during the reporting period. There were two minor environmental incidents and no non-compliances identified during the reporting period.

Table 3-10 Issues/incidents/non-compliances

Date	Location	Description
28/04/2022	Church Street	During an ER Inspection, it was identified that hydrocarbons had spilled from a parked asphalt machine. ERSED controls were in place, with additional controls applied. The spill kit was also deployed.
09/05/2022	Barrack Lane	Stormwater containing sediment was identified in the run-off from the sealed Barrack Lane compound during a significant rain event. Sandbags were in place near stormwater inlet however additional ERSED controls were deemed necessary. Coir logs were placed in location along the site boundary and sandbags were used to protect the nearest stormwater inlet.

Appendices

A-1 Weather Observations

Table A-1-1 Weather Observations: Parramatta North (Masons Drive) {station 066124}

Date	Temperatures		Rain	Temp	RH	9:00 AM		
	Min	Max				Cld	Dir	Spd
	°C	°C	mm	%	8th			
26/04/2022	13.8	20	1.8	16.4	96	8	SW	2
27/04/2022	14.2	19.8	1.2	17	94	8	NW	6
28/04/2022	16.8	22.5	1.6	18.4	96	8	NW	4
29/04/2022	15.8	27.8	6.8	17.2	98	6	NW	4
30/04/2022	17.2	22.2	1	17.5	93	8	W	4
1/05/2022	10	23	1.8	16	43	5	W	4
2/05/2022	10.5	23.2	0	16.8	58	2	WNNW	4
3/05/2022	11.5	24.2	0	18.2	56	2	W	2
4/05/2022	10.8	26.5	0	16.2	58	0	W	2
5/05/2022	14.8	23.2	0.6	17	86	6	NW	2
6/05/2022	8.2	20.4	0	14.8	55	0	W	7
7/05/2022	5	20	0	13.5	61	4	W	6
8/05/2022	5.8	20.5	0	13	66	0	W	2
9/05/2022	10.2	19	0.2	15.2	93	7	SW	6
10/05/2022	11	22	6.8	16.4	84	6	SW	4
11/05/2022	14.5	18.8	18	16.5	97	8	Calm	*
12/05/2022	16	21	23	17	98	8	NE	4
13/05/2022	17	21.5	6.8	18.2	98	8	N	2
14/05/2022	15.8	26	0.2	18.5	95	8	NW	2
15/05/2022	16.5	25.2	0	18.6	89	6	NW	2
16/05/2022	10.4	24.5	0.4	15.2	74	0	NW	4
17/05/2022	9	22.2	0	15.5	72	0	W	4
18/05/2022	6.4	21.4	0	13.2	60	0	NW	4
19/05/2022	5.2	20.5	0	11.5	45	4	W	6
20/05/2022	8	18	0.2	12	76	8	SW	2
21/05/2022	12	18.5	14.2	14	97	7	SW	4
22/05/2022	11.8	19	5.4	13.8	97	6	SW	2
23/05/2022	11.5	19.5	4.8	14.2	97	6	SSW	4
24/05/2022	11.2	20.2	3.4	13.5	97	7	W	2
25/05/2022	9.8	*	0.8	13.6	96	5	SW	2



Table A-1-2 Wind Observations: Sydney Olympic Park AWS (Archery Centre) {station 066212}.

Date	Maximum Wind Gusts			9:00 AM		3:00 PM	
	Direction	Speed	Time	Direction	Speed	Direction	Speed
		km/h	local		km/h		km/h
26/04/2022	ESE	13	21:55	WNW	4	Calm	*
27/04/2022	NNW	13	8:24	WNW	7	Calm	*
28/04/2022	NW	17	12:42	NW	2	NE	4
29/04/2022	WNW	17	9:38	WNW	6	Calm	*
30/04/2022	WSW	30	8:11	W	7	Calm	*
1/05/2022	W	19	8:34	W	7	Calm	*
2/05/2022	W	19	11:04	NW	7	ENE	6
3/05/2022	N	20	13:13	NW	6	N	6
4/05/2022	NNW	20	11:01	NW	7	Calm	*
5/05/2022	SW	20	12:33	NNW	9	SE	7
6/05/2022	WNW	26	10:47	W	11	S	2
7/05/2022	WNW	31	14:48	NW	13	WNW	15
8/05/2022	WNW	22	9:00	WNW	9	ESE	13
9/05/2022	S	17	17:56	WSW	7	W	6
10/05/2022	E	37	13:15	NW	6	E	22
11/05/2022	N	19	2:27	Calm	*	WNW	7
12/05/2022	NNE	26	14:28	Calm	*	N	9
13/05/2022	ENE	13	16:08	Calm	*	ESE	7
14/05/2022	E	17	15:33	WNW	2	E	6
15/05/2022	*	*	*	WNW	4	Calm	*
16/05/2022	WNW	20	13:32	Calm	*	NNW	6
17/05/2022	WNW	26	10:39	NNW	4	NW	9
18/05/2022	NW	28	10:31	NW	11	WSW	11
19/05/2022	WNW	19	8:51	WNW	11	NW	4
20/05/2022	W	17	9:25	WSW	2	Calm	*
21/05/2022	SW	20	0:56	W	7	SSW	11
22/05/2022	S	22	13:49	Calm	*	S	9
23/05/2022	E	26	14:41	W	6	E	11
24/05/2022	ESE	19	12:45	WNW	6	ENE	4
25/05/2022	*	*	*	WNW	6	SE	9

Notes:

Blue text indicates a rain event greater than 1mm of rain.

The orange text indicates a rain event greater than the 80th percentile of 25.8mm, and a wind speed of greater than 25km/hr

Red text indicates a rain event greater than the 85th percentile of 33.1mm, and a wind speed greater than 50km/hr.

* Data was unavailable.

A-2 Noise and Vibration Monitoring Results

Table A-2-1 Noise Monitoring Results

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	L _{Amax}	Recorded L _{eq, 15min} (dBA)	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
19/05/2022	13:42	Standard Hours	Trackworks and concrete works	Hawkesbury Road	157 Hawkesbury Rd, Westmead	61	76	-	78.7	67.3	-8.7	No	Monthly verification noise monitoring. Construction noise is dominant noise source.
19/05/2022	13:15	Standard Hours	Finishing works	Hawkesbury Road	199 Hawkesbury Rd, Westmead	59	75	-	74.2	59.5	-15.5	No	Monthly verification noise monitoring. Traffic is dominant noise source.
19/05/2022	12:00	Standard Hours	Trackworks	Bunya East	Cumberland Hospital East	59	66	-	63.6	49.3	-16.7	No	Monthly verification noise monitoring. Construction noise is dominant noise source.
19/05/2022	11:36	Standard Hours	Concrete works	Factory/O'Connell	55 O'Connell St, North Parramatta	52	76	-	81.6	69.2	-6.8	No	Monthly verification noise monitoring. Traffic is dominant noise source.
19/05/2022	11:02	Standard Hours	Finishing Works	Church/Pennant Hills Road	St Patricks Cemetery, North Parramatta	61	75	-	80.4	67.7	-7.3	No	Monthly verification noise monitoring. Construction noise is dominant noise source.
19/05/2022	10:32	Standard Hours	Concrete works	Church Street	20 Victoria Rd, Parramatta	69	76	-	85.9	67.5	-8.5	No	Monthly verification noise monitoring. Traffic is dominant noise source.
24/05/2022	14:57	Standard Hours	Finishing Works	Macquarie Street	Arthur Phillip High School, Parramatta	68	79	-	88.2	65.4	-13.6	No	Monthly verification noise monitoring. Non-PLR construction noise is dominant noise source.
24/05/2022	13:56	Standard Hours	Concrete Works	George Street	9 Noller Pde, Parramatta	53	75	-	77.8	56.9	-18.1	No	Monthly verification noise monitoring. Construction noise is dominant noise source.
26/06/2020 - ongoing	Continuous monitoring	Construction works	Hawkesbury Road works	Westmead Institute for Medical Research (Sleep Lab)	65	*	*	*	*	*	*	No	Continuous monitoring values are available on request. During the reporting period, all alarms were investigated by Parramatta Connect in consultation with HAC. Where the source of the alarm was determined to be construction activities, works were ceased, and additional management measures were identified and implemented prior to recommencement of works.
26/06/2020 - ongoing	Continuous monitoring	Construction works	Hawkesbury Road works	Westmead Institute for Medical Research (Brain Dynamics Centre)	65	*	*	*	*	*	*	No	
26/06/2020 - ongoing	Continuous monitoring	Construction works	Hawkesbury Road works	Children's Medical Research Institute (Microscopy Labs)	65	*	*	*	*	*	*	No	
26/06/2020 - ongoing	Continuous monitoring	Construction works	Cumberland Hospital	Cumberland Hospital (Clinical psychology rooms)	55	*	*	*	*	*	*	No	

¹Construction noise inaudible at the monitoring location. It was assumed that construction noise contribution is at least 10dB(A) less than measured.

Standard hours:

- a) All areas excluding Eat Street and Camellia – Monday to Friday 7:00 am to 7:00 pm. Saturday 8:00 am to 6:00 pm
- b) Eat Street (Church Street between Palmer Street and George Street) – Monday to Friday 7:00 am to 6:00 pm. Saturday 8:00 am to 12:00 pm
- c) Camellia, Rosehill and Rydalmere (east of James Ruse Drive to Victoria Road) – 24 hours a day and seven days a week provided that sensitive receivers are not affected by noise levels of greater than 5 dBA above the rating background level at any residence

OOHW Period 1 is defined as:

- a) 6:00pm to 10:00pm (evenings) Monday to Saturday
- b) 7:00am to 8:00am and 1:00pm to 10:00pm (day & evening) Saturday and
- c) 8:00am to 6:00pm Sunday and public holidays (days).

OOHW Period 2 is defined as:

- a) 10:00pm to 7:00am (nights) Monday to Saturday and 6:00pm to 8:00am (nights) Sundays and public holidays.

Additional Mitigation Measures

- PN = Project Notification
- V = Verification Monitoring
- RP = Respite Period
- AA = Alternate Accommodation
- SN = Specific Notification / individual briefing or phone call
- DR = Duration Reduction
- RO = Project Specific Respite Offer


Table A-2-2 Vibration Monitoring Results

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	Trigger Value (mm/s)	95 th Percentile PPV (mm/s)	Maximum PPV (mm/s)	Exceedance of Target	Construction Vibration Exceedance	Comments
26/06/2020	Continuous monitoring	Hawkesbury Road works	Hawkesbury Road	Westmead Institute for Medical Research (HAL incubators)	0.1 mm/s	*	No	No	Activities are reviewed in response to exceedance alerts. Where the exceedance is attributed to construction, a review is undertaken of works and plant/equipment or methodology is modified where necessary.		
26/06/2020	Continuous monitoring	Hawkesbury Road works	Hawkesbury Road	Westmead Institute for Medical Research (Microscopy Labs)	0.1 mm/s	*	No	No			
26/06/2020	Continuous monitoring	Hawkesbury Road works	Hawkesbury Road	Children's Medical Research Institute (Microscopy Labs)	0.1 mm/s	*	No	No		Continuous monitoring values are available on request.	


A-5 Air Quality Monitoring Results

Table A-4-1 Summary of Asbestos Fibre Monitoring


Report Number	Date	Location	Start time	End time	Result (Fibres/Fields)	Result (Fibres/mL)
AMR390	28-Apr	GRAND AVE OVERPASS - SOUTH END OF REMOVAL WORKS	7:20	14:41	0/100	<0.01
AMR390	28-Apr	GRAND AVE OVERPASS - WEST BOUNDARY OF REMOVAL WORKS, SOUTH END	7:21	14:42	0/100	<0.01
AMR390	28-Apr	GRAND AVE OVERPASS - WEST BOUNDARY OF REMOVAL WORKS, NORTH END	7:22	14:43	0/100	<0.01
AMR390	28-Apr	GRAND AVE OVERPASS - CLEAN SIDE OF DECON UNIT	7:23	14:44	0/100	<0.01
AMR392	29-Apr	ARTHUR ST COMPOUND- RAIL CORRIDOR BATTER WEST OF NEW STAIRS	6:20	14:22	0/100	<0.01
AMR392	29-Apr	ARTHUR ST COMPOUND- RAIL CORRIDOR BATTER, SW OF BATTER	6:21	14:23	0/100	<0.01
AMR392	29-Apr	ARTHUR ST COMPOUND- RAIL CORRIDOR BATTER, SE OF BATTER	6:22	14:24	0/100	<0.01
AMR392	29-Apr	ARTHUR ST COMPOUND- RAIL CORRIDOR BATTER, EAST OF BATTER	6:23	14:25	0/100	<0.01
AMR393	2-May	NE CORNER OF WORK AREA, ADJACENT TO BRIDGE	7:32	14:07	0/100	<0.01
AMR393	2-May	NW CORNER OF WORK AREA, ADJACENT TO ARTHUR ST	7:31	14:08	0/100	<0.01
AMR393	2-May	SE CORNER OF WORK AREA, ADJACENT TO BRIDGE	7:30	14:09	0/100	<0.01



Report Number	Date	Location	Start time	End time	Result (Fibres/Fields)	Result (Fibres/mL)
AMR393	2-May	SW CORNER OF WORK AREA, ADJACENT TO ARTHUR ST	7:29	14:10	0/100	<0.01
AMR394	3-May	NE CORNER OF WORK AREA	7:02	13:08	0/100	<0.01
AMR394	3-May	NW CORNER OF WORK AREA	7:03	13:09	0/100	<0.01
AMR394	3-May	SW CORNER OF WORK AREA	7:04	13:10	0/100	<0.01
AMR394	3-May	SE CORNER OF WORK AREA	7:05	13:11	0/100	<0.01
AMR395	4-May	NE CORNER OF WORK AREA, ADJACENT TO BRIDGE	7:36	15:08	0/100	<0.01
AMR395	4-May	NW CORNER OF WORK AREA, NEAR ARTHUR ST	7:37	15:09	0/100	<0.01
AMR395	4-May	SW CORNER OF WORK AREA, NEAR ATTACHED ST	7:38	15:10	0/100	<0.01
AMR395	4-May	SE CORNER OF WORK AREA, NEAR BRIDGE	7:39	15:11	0/100	<0.01
AMR396	5-May	TRAMWAY SITE, WESTERN END OF ACM STOCKPILE	7:07	16:18	0/100	<0.01
AMR396	5-May	TRAMWAY SITE, EASTERN END OF ACM STOCKPILE	7:08	16:19	0/100	<0.01
AMR396	5-May	TRAMWAY SITE, APPROX 20M SOUTH OF ACM STOCKPILE	7:09	16:20	0/100	<0.01
AMR396	5-May	ARTHUR STREET SITE, NE END OF WORK AREA	7:19	16:35	0/100	<0.01
AMR396	5-May	ARTHUR STREET SITE, NW END OF WORK AREA	7:20	16:36	0/100	<0.01
AMR396	5-May	ARTHUR STREET SITE, SOUTHERN SIDE OF WORK AREA	7:21	16:37	0/100	<0.01
AMR397	6-May	ARTHUR STREET, SOUTHERN BOUNDARY	7:35	16:02	0/100	<0.01
AMR397	6-May	ARTHUR STREET, NW CORNER OF WORK AREA	7:36	16:03	0/100	<0.01
AMR397	6-May	ARTHUR STREET, NE CORNER OF WORK AREA	7:37	16:04	0/100	<0.01
AMR397	6-May	TRAMWAY, SE CORNER OF WORK AREA	7:49	15:46	0/100	<0.01
AMR397	6-May	TRAMWAY, WEST END OF WORK AREA	7:50	15:47	0/100	<0.01
AMR397	6-May	TRAMWAY, NE CORNER OF WORK AREA	7:51	15:48	0/100	<0.01



Report Number	Date	Location	Start time	End time	Result (Fibres/Fields)	Result (Fibres/mL)
AMR398	9-May	ARTHUR ST COMPUND, SOUTH EMBANKMENT - EAST OF WORKS	7:02	15:45	0/100	<0.01
AMR398	9-May	ARTHUR ST COMPUND, SOUTH EMBANKMENT - SE OF WORKS	7:03	15:46	0/100	<0.01
AMR398	9-May	ARTHUR ST COMPUND, SOUTH EMBANKMENT - SW OF WORKS	7:04	15:47	0/100	<0.01
AMR398	9-May	ARTHUR ST COMPUND, SOUTH EMBANKMENT - WEST OF WORKS	7:05	15:48	0/100	<0.01
AMR399	10-May	ARTHUR ST COMPOUND - SW OF BATTER EXCAVATION	7:10	15:32	0/100	<0.01
AMR399	10-May	ARTHUR ST COMPOUND - SE OF BATTER EXCAVATION	7:12	15:33	0/100	<0.01
AMR399	10-May	ARTHUR ST COMPOUND - NORTH OF BATTER EXCAVATION	7:14	15:35	0/100	<0.01
AMR399	10-May	TRAMWAY AVE - SOUTH OF ACM STOCKPILE LOADOUT	7:29	14:28	0/100	<0.01
AMR399	10-May	TRAMWAY AVE - WEST OF ACM STOCKPILE LOADOUT	7:31	14:30	0/100	<0.01
AMR399	10-May	TRAMWAY AVE - NORTH OF ACM STOCKPILE LOADOUT	7:33	14:31	0/100	<0.01
AMR400	11-May	TRAMWAY AVE - NORTH OF WESTERN EXCAVATION	7:28	15:50	0/100	<0.01
AMR400	11-May	TRAMWAY AVE - SW OF WESTERN EXCAVATION	7:31	15:52	0/100	<0.01
AMR400	11-May	TRAMWAY AVE - NE OF WESTERN EXCAVATION	7:33	15:53	0/100	<0.01
AMR400	11-May	ARTHUR ST COMPOUND - NORTH OF EMBANKMENT EXCAVATION	8:01	13:40	0/100	<0.01
AMR400	11-May	ARTHUR ST COMPOUND - SW OF EMBANKMENT EXCAVATION	8:04	13:42	0/100	<0.01



Report Number	Date	Location	Start time	End time	Result (Fibres/Fields)	Result (Fibres/mL)
AMR400	11-May	ARTHUR ST COMPOUND - SE OF EMBANKMENT EXCAVATION	8:09	13:43	0/100	<0.01
AMR401	12-May	TRAMWAY AVE - EAST OF ACM STOCKPILE	7:10	15:23	0/100	<0.01
AMR401	12-May	TRAMWAY AVE - NW OF ACM STOCKPILE	7:12	15:24	0/100	<0.01
AMR401	12-May	TRAMWAY AVE - SOUTH OF ACM STOCKPILE	7:14	15:25	0/100	<0.01
AMR401	12-May	ARTHUR ST - SOUTH OF ACM STOCKPILE	7:32	15:34	0/100	<0.01
AMR401	12-May	ARTHUR ST - SW OF ACM STOCKPILE	7:33	15:35	0/100	<0.01
AMR402	13-May	ARTHUR ST, SW BOUNDARY FENCE	7:13	15:13	0/100	<0.01
AMR402	13-May	ARTHUR ST, SE BOUNDARY FENCE	7:14	15:12	0/100	<0.01
AMR402	13-May	ARTHUR ST, SW CORNER OF BRIDGE	7:15	15:11	0/100	<0.01
AMR402	13-May	TRAMWAY, EAST OF STOCKPILE	7:25	12:25	0/100	<0.01
AMR402	13-May	TRAMWAY, WEST OF STOCKPILE	7:26	12:26	0/100	<0.01
AMR402	13-May	TRAMWAY, SOUTH OF STOCKPILE	7:27	12:27	0/100	<0.01
AMR403	16-May	SE CORNER OF WORK ARE, AT GATE TO SITE OFFICE	7:18	15:28	0/100	<0.01
AMR403	16-May	SW CORNER OF WORK AREA, AT SITE BOUNDARY FENCE	7:19	15:29	0/100	<0.01
AMR403	16-May	NW CORNER OF WORK AREA, AT GATE TO ARTHUR ST	7:20	15:30	0/100	<0.01
AMR403	16-May	NE CORNER OF WORK AREA, AT BRIDGE	7:21	15:31	0/100	<0.01